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ABSTRACT

Three experiments were conducted to determine whether an instructional set for visual imagery would facilitate reading comprehension of elementary school children. In the first experiment, 38 fifth graders randomly assigned to experimental and control groups were given the Durrell-Sullivan Reading Capacity and Achievement tests after the experimental group had been given instructions to visualize what they had heard and read. Raw scores revealed no significant differences between the groups as a whole, but the upper third of the experimental group was favored at the .05 level of significance. A second experiment with 40 randomly assigned fifth and sixth graders confirmed two hypotheses: (1) that when given a comprehension test, the upper third of the readers who had been instructed to visualize would do better than the readers who had just been told that comprehension was going to be tested, and (2) that the mean scores would be the same for both groups. A third experiment with 36 third and fourth graders duplicating the second experiment produced the same results. These findings indicate that teachers should try to help children develop the metacognitive skill of visual imagery as a strategy for improving comprehension. (JL)

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Improving Comprehension With Mental Imagery

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Will children better understand what they read if they try to get a picture in their mind's eye? This article reports three experiments designed to determine whether an instructional set for visual imagery would facilitate reading comprehension of elementary school children. A rationale is developed which leads to the research question: "Can instructions to visualize from verbal descriptions facilitate reading comprehension?" The discussion encourages elementary school teachers to help children to develop an increased awareness of mental imagery as a strategy for understanding what they read.

During the development of the Visual Imagery Response Scale (Oliver, 1976), children in grades three through six were individually instructed to visualize the setting, characters, and events from listening to descriptive story passages read aloud to them. After each item had been read aloud, children were asked to describe the pictures in their minds. Points were assigned to the verbal descriptions that children gave of their visual images. It was observed that children often responded with the literal details before describing what they had visualized. It seemed that the intent to visualize had provided a strategy for attending to the details. Perhaps the perception of the details was prerequisite to visualization.

Although visual imagery is a construct that can only be imagined, McGuigan(1979) has measured covert eye movements

during the reading of descriptive passages. These eye movements would seem to be symptoms of visualization. Cramer(1981) studied the effects of three types of imagery instructions on single item and paired-associative learning of nouns with first and fifth grade children in two experiments. It was found that those children who reported using imagery did increase their learning.

The First Experiment

Thirty-eight fifth-grade children in an inner-city school were randomly assigned to experimental and control groups to determine whether instructions to visualize verbal descriptions would facilitate reading and listening comprehension. Both groups were administered the Durrell-Sullivan Reading Capacity and Achievement Tests, Intermediate: Form A (Durrell and Sullivan, 1945) after the experimental group had been given instructions to visualize what they had heard and read. A comparison of mean raw scores with a t-test revealed no significant differences. But when the upper third of the scores were compared, the experimental group was favored at the .05 level of significance. It seemed that the higher scorers may have been fluent enough to have used the instructional set for visual imagery as a strategy to improve comprehension. Perhaps the lower achieved readers were too involved in mediating word identification to use the mind set to advantage.

The Second Experiment

A subsequent study was conducted in February, 1982 to determine the effect of a mind set for visual imagery on the reading comprehension of 40 fifth and sixth grade children enrolled in the Reid Laboratory School of Eastern Washington University. Two hypotheses were tested. The first hypothesis stated that the mean of the upper one-third of the scores on the Gates-MacGinitie Reading Test (GMRT), Survey D, Form 1,(1964) Comprehension Subtest would be greater for the children who were given an instructional set for visual imagery than it would for those children who received a comprehension of meaning set. The second hypothesis predicted that the mean of the scores on the GMRT, Comprehension subtest would be equal for both the Visual Imagery Set (VIS) experimental group and the Comprehension of Meaning (CMS) Set group. The level of confidence was set at $p < .05$ for both hypotheses.

The Comprehension of Meaning Set (CMS) consisted of the following directions followed by the directions as printed in the examiner's manual of the GMRT. "We are going to take a test to see how well you can understand what you read. Read each test item very carefully and think about what you have read before you choose the answer. It is very important to understand what you read. What you understand from what you read is called comprehension. Comprehension is measured by how many correct answers you are able to choose when you read. Your

teachers help you to comprehend by asking you questions so that you will look for the answers. Some questions are meant to help you find the facts. Other questions are meant to get you to think about what you are reading. Let's see how many correct answers you are able to choose on the test of comprehension that you will take now. I will explain exactly what you are to do."

The Visual Imagery Set (VIS) was given to the experimental group as follows: "Did you ever have a dream in which you thought that you could see things? You know that they weren't really there. They were in your imagination. You visualized the things that you imagined in your dream. You can use your imagination to help you remember things; to listen better; and to enjoy reading more and to learn more from what you read.

Let's try an experiment that might help you to understand how you can visualize things. Close your eyes and imagine that you are looking at the front of your house. Can you describe what you see?" Stop here to permit response. Encourage response with such questions as: "Is there a porch? Is the porch made of wood? What's in the front yard? How many windows are there in front of your house?" Then the children were told that, "The authors of the books that you read write stories that describe what they've imagined or visualized in their mind's eye. In order to really get the picture that the author is describing, we need to try to get a picture in our mind of what the author

had in mind. I would like you to try to imagine that you can see the people and places and actions that are described in the little stories of the test items that you will read. I believe that you will do much better on the test if you will picture,in your mind, the people in the test stories and what they are doing." Then the examiner followed the directions in the examiner's manual of the test.

Comprehension scores were ranked for each group and the upper and lower third of the scores were compared by means of a t-test in order to test the null of the two hypotheses. Because the children had been randomly assigned, the two groups were considered equal in comprehension before the treatment was given. Both research hypotheses were supported at the $p < .05$ level.

The Third Experiment

Thirty-six third and fourth grade children of the Reid Laboratory School at Eastern Washington University were randomly assigned to a VIS and a CMS group to test the same hypotheses of the second experiment by replication of the procedure and data analysis reported above. Again, both hypotheses were supported.

Discussion

The results of the experiments reported here would suggest that the better readers, in elementary school, can improve

their reading comprehension by developing a strategy in which they intend to visualize from what they read. Frank Smith(1982) has defined comprehension as getting the answers to questions and has explained that comprehension is relative to what questions are asked. Gibson(1941), after reviewing the concept of set, explained that a person adopts a task attitude for the task and that a preparatory set contains aspects of both expectation and intention. Learning seems to depend upon intention to learn. In order to get children to comprehend what teachers want them to comprehend, teachers ask children study guide questions. Study guide questions are designed to establish intent to comprehend, that is, to get the answers that the teacher wants students to have. Comprehension is relative to the intent to comprehend. Gibson referred to a study done by Moore in 1936 in which subjects were given prose paragraphs with instructions to memorize each paragraph, or simply read it, or count the words in it. When recall was demanded immediately afterward, the mean scores for the three groups were 51, 38, and 7 respectively. Moore concluded that, "the determining tendency is the organizing principle in learning."

Children's reading comprehension does, indeed, seem to be enhanced with an instructional set for visual imagery. To develop an awareness of the ability to visualize as part of the thinking process in one's own information processing system is a metacognitive skill. Teachers are encouraged to help children to develop the metacognitive skill of visual imagery

as a strategy for improving comprehension. Perhaps, with instruction, even the lower achieved readers could use visualization as a useful comprehesnsion strategy that might even help with word recognition, just as the picture on a jigsaw puzzle helps to identify the missing piece.

We need research now on methods for developing the metacognitive skill of visual imagery. Logically, one of the most direct ways to help children to become aware of the process of visualization in their thinking is to talk about it openly. Dramatic play would also be expected to develop imagery. In order to pantomime the action of a character in story theater, a child would try to visualize what that character is doing from listening to the narrator read the story. Reading aloud to children from imaginative literature would be expected to develop imagery. Talking about the visual interpretations after listening to a story would probably develop the awareness of the imagery.

Children who aren't aware of imagery in their thinking might not enjoy reading or listening to imaginative literature anymore that they would enjoy listening to television without the video. Visualization enhances comprehension. Don't you see what I mean?

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